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| 09/933,315      | 08/20/2001  | Erik V. Johnson      | 14210BAUS02U        | 7049             |

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EXAMINER

LAVARIAS, ARNEL C

ART UNIT PAPER NUMBER

2872

DATE MAILED: 12/12/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/933,315

Applicant(s)

JOHNSON ET AL.

Examiner

Arnel C. Lavarias

Art Unit

2872

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 04 November 2002 and 20 August 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) 5-11 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 August 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election of Invention I, Claims 2-4 in Paper No. 4, dated 11/4/02, is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).
2. Claims 5-11 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to nonelected inventions, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 4, dated 11/4/02.

### *Specification*

3. The disclosure is objected to because of the following informalities:
  - ✓ Page 1, line 17- 'XX/XXX,XXX' should read '09/846,886'
  - ✓ Page 10, line 24- 'zero (low).' should read 'one (high).'
  - ✓ Page 11, line 3- 'AND' should read 'XOR'; 'one (high).' should read 'zero (low).'Appropriate correction is required.

### *Claim Objections*

4. Claim 4 is objected to because of the following informalities:
  - ✓ Claim 4, line 12- 'limiter is increases' should read 'limiter increases'.Appropriate correction is required.

***Double Patenting***

5. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

6. Claim 1 is provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over Claim 1 of copending Application No. US2002/0109873 A1. Although the conflicting claims are not identical, they are not patentably distinct from each other because Claim 1 of US2002/0109873 A1 discloses an optical switching device based on stable, non-absorbing optical hard limiters, the optical switching device comprising optical switching logic for switching optical information from an optical input to one of a number of optical outputs based upon an address in the optical information. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the optical switching device of Claim 1 of US2002/0109873 A1 process information optically, as disclosed in Claim 1 of the instant application, since the devices of Claim 1 of US2002/0109873 A1 and Claim 1 of the instant application are both logic devices based on stable, non-absorbing optical hard limiters.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 102 and 103***

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 1-3 are rejected under 35 U.S.C. 102(b) as anticipated by Brzozowski et al.

Brzozowski et al. discloses an optical logic device for processing information optically using the transmitted and/or reflected characteristics of at least one stable, non-absorbing optical hard limiter (See Page 3, Section II; Pages 6-7, Section IIIId; Figure 9), wherein the optical hard limiter comprises alternating layers of materials with different linear indices and oppositely signed Kerr coefficients (See Figure 1; Page 3, Section II). Brzozowski et al. additionally discloses the transmitted characteristics of the hard limiter comprising a first range, a second range, and a third range, the ranges being defined as recited in Claim 3 of the instant application (See Figures 6, 7; Page 3, Section II; Page 4-5, Section IIIa).

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10. Claims 1 and 3-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Smith.

Smith discloses an optical logic device for processing information optically using the transmitted and/or reflected characteristics of at least one stable, non-absorbing optical hard limiter (See Figures 1-5; col. 2, line 46-col. 5, line 24). Smith additionally discloses the transmitted characteristics of the hard limiter comprising a first range, a second range, and a third range, the ranges being defined as recited in Claim 3 of the instant application (See Figure 3; col. 3, lines 5-37). Additionally, Smith inherently discloses the optical logic device wherein the reflected characteristics of the hard limiter comprise a first range, a second range, and a third range as recited in Claim 4 of the instant application (See Figure 3 for the transmitted characteristics of the hard limiter). Inherently, by the law of conservation of energy, the input intensity to the hard limiter must equal the sum of the energy absorbed, reflected, and transmitted by the hard limiter. Since the hard limiter is ideally a non-absorbing hard limiter, the input energy equals the sum of the output energy that is reflected and transmitted. Figure 3 of Smith discloses the transmitted energy as a function of the input energy. The reflected energy is therefore calculated as (input energy – transmitted energy), and this reflected energy can therefore be plotted as a function of input energy as well, leading to the claimed characteristics as recited in Claim 4 of the instant application.

11. Claim 4 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Brzozowski et al.

Brzozowski et al. discloses the invention as set forth above in Claims 1-3.

Brzozowski et al. inherently discloses the optical logic device wherein the reflected

characteristics of the hard limiter comprise a first range, a second range, and a third range as recited in Claim 4 of the instant application (See Figures 6-7 for the transmitted characteristics of the hard limiter). Inherently, by the law of conservation of energy, the input intensity to the hard limiter must equal the sum of the energy absorbed, reflected, and transmitted by the hard limiter. Since the hard limiter is ideally a non-absorbing hard limiter, the input energy equals the sum of the output energy that is reflected and transmitted. Figure 6 of Brzozowski et al. discloses the transmitted energy as a function of the input energy. The reflected energy is therefore calculated as (input energy – transmitted energy), and this reflected energy can therefore be plotted as a function of input energy as well, leading to the claimed characteristics as recited in Claim 4 of the instant application. In the case that Claim 4 is not clearly anticipated by Brzozowski et al., it would have been obvious to one skilled in the art at the time the invention was made to have the reflected characteristics of the hard limiter include the claimed characteristics as recited in Claim 4 of the instant application, since it has been held that discovering an optimum value of a result effective variable involved only routine skill in the art. One would have been motivated to have the reflected characteristics of the hard limiter include the claimed characteristics as recited in Claim 4 of the instant application for the purpose of adjusting the dynamic range of the hard limiter based on the refractive indices of the two materials used in the hard limiter.

12. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Smith in view of Cuykendall et al.

Smith discloses the invention as set forth above in Claim 1. Smith lacks the hard limiter comprising alternating layers of materials with different linear indices and oppositely signed Kerr coefficients. However, Cuykendall et al. teaches an optical gating structure (See Figures 1, 4, 16a, 16b) wherein the nonlinear material(s) used to provide the optical gating function may be alternating layers of materials with different linear indices and oppositely signed Kerr coefficients (See in particular Figures 16a, 16b; col. 3, line 26-col. 11, line 43). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have the hard limiter comprise alternating layers of materials with different linear indices and oppositely signed Kerr coefficients, as taught by Cuykendall et al., in the optical logic device of Smith. One would have been motivated to do this to improve the switching quality of the hard limiter, as well as improve the beam shape of the transmitted beam through the hard limiter.

### *Conclusion*

13. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

E. Johnson, L. Brzozowski, E. H. Sargent, "All-optical time-domain IP router using optical limiters", LEOS 2000, 13<sup>th</sup> Annual Meeting, Vol. 1, Nov. 13-16, 2000, pp. 33-34.

Johnson et al. is being cited to evidence the transmitted and reflected intensities for a stable, non-absorbing optical hard limiter (See Figures 1a and 1b). It is noted that the results of Figure 1b are obtainable using the results of Figure 1a and the law of conservation of energy.



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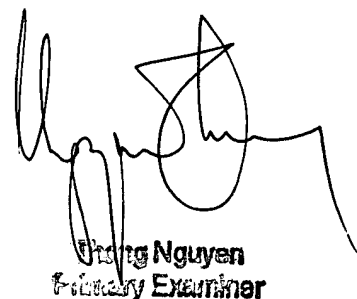
14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Arnel C. Lavarias whose telephone number is 703-305-4007. The examiner can normally be reached on M-F 8:30 AM - 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cassandra Spyrou can be reached on 703-308-1687. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7722 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-1782.



Arnel C. Lavarias  
December 9, 2002



Thang Nguyen  
Primary Examiner